# Simulations for Neutrino Physics

Gabriel Perdue Fermilab 12.May.2014









#### Why Only Neutrinos?

- We will begin with this particular effort on neutrinos because neutrino experiments constitute the core of the Intensity Frontier.
- If successful and there is demand, we may undertake similar efforts with different groups.
  - Currently working closely with mu2e on muon capture physics and with g-2 on artg4tk.
- The goal for the PDS is, in any case, to work with all the experiments at the lab with the goal of doing the highest quality physics possible.





#### Opportunities for Engagement

- During the last meeting we identified a large number of needs with regards to simulation software for neutrino experiments.
- The work-load is too large for the PDS group to take on in isolation, but in a partnership with experiments, we could leverage our expertise to bring others up to a productive speed quickly.
- We will be starting a program to address this in the next month or so.





- Initially, we suggest to address Geant4 and GENIE together in one monthly meeting.
  - We may split them if needed, but initially it would be useful to combine them, especially while planning.
- The purpose of the meeting would be to coordinate work and share progress.
  - Early meetings in the series would largely be dedicated to setting the agenda for work. What are the most pressing needs and how to we all work together to the greatest common benefit?





- Work will not be restricted to the meetings!
- The real work would take place once we have identified tasks and teams and would be coordinated more informally and adhoc between the people working on the tasks.
- The monthly meeting would be for higher-level planning and monitoring progress.
  - It would occasionally be dedicated to more technical issues as the work demands, but we would advertise an agenda so people may best decide when/how to attend.





- The work plan would be aimed at the needs of experiments from the lab. We would like to encourage participation not only from experimentalists, but also from theorists and phenomenologists.
  - Please invite interested colleagues!
  - We would likely try to arrange for an occasional special meeting to multiply the impact of visitors to the lab, or organize special seminars, etc.
- We may also attempt to organize and host dedicated workshops, both for special topics and for training / schools.





- Note that the meetings and discussions would be open to all observers.
- There are no "membership" requirements to participate.
- However, to impact schedules, we need an investment of effort and resources.
  - In order to meaningfully move the order of priorities or get items on and off the work plan, we need partners.





#### Progress

- Significant discussion with senior management in MINERvA and MicroBooNE helped to set the outline of this structure.
- First meeting date not yet set.
- We have contacted MINERvA, MicroBooNE, NOvA, MINOS, LBNE, and MiniBooNE.
  - Gathering names of initial meeting representatives.